



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, NE
ATLANTA, GEORGIA 30365

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MEMORANDUM

DATE: March 30, 1993

SUBJECT: Risk Review Comments on Human Health Aspects
Olin Corporation, McIntosh Plant NPL Site, Alabama

FROM: Julie W. Keller, Toxicologist *JW Keller*
Office of Health Assessment

TO: Cheryl Smith, Remedial Project Manager
Superfund Remedial Branch

THROUGH: Elmer W. Akin, Chief *EWA*
Office of Health Assessment

Per your request, I have reviewed the **Draft Remedial Investigation Report (including the Baseline Risk Assessment) and Technical Review Comments prepared by PRC Environmental Management Inc.** for the NPL Site. My comments provided below are divided into two sections, i.e., (1) comments specifically to you the RPM and (2) comments that, if you concur, can be conveyed verbatim to the party responsible for preparation of the document. To facilitate the verbatim conveyance, I will be pleased to provide on request a copy of this memo via cc: mail.

General Comments to the RPM

It is the policy of the EPA Region IV Office of Health Assessment to require written responses to review comments provided by this office. If a meeting with the PRP is to be held to discuss these comments, we request that written responses be provided prior to such a meeting. We also request that any risk assessment comments received from the State or any other source be provided to the Office of Health Assessment for our site file. If risk comments from sources other than this office are forwarded to the PRP contractor, the source should be clearly identified unless concurrence of this office is sought. In this case, we should formally review these comments and provide you with our response before they are forwarded.

Review of this document has been discouraging. Many of the comments I provided in memos dated July 10, 1992 and September 23, 1992 have not been addressed in this document. Due to the numerous errors and deficiencies the risk assessment staff was not able to

conduct a detailed review of this document. These comments should not be considered complete; a detailed review will be performed on the next draft of this document.

The PRC comments on the human health aspects of the Baseline Risk Assessment (General Comment 1 and Specific Comments 1-21) are well written, however, I have the following changes and additions. Lack of comment on a PRC comment indicates agreement.

Specific Comment 1. The second sentence should be deleted and the following statement added to the comment: Lack of toxicity values should not be used to eliminate contaminants of potential concern in the baseline risk assessment. These chemicals should be discussed qualitatively in the toxicity assessment and risk characterization sections.

Specific Comment 2. The following should be added to this comment: Carbon tetrachloride was detected above the MCL and therefore should not be eliminated from the contaminants of potential concern list. Nickel should be removed from the second bullet; the maximum concentration of 1310 ug/l exceeds the 100 ug/l MCL. Constituents detected above the MCL should not be eliminated from the baseline risk assessment.

Specific Comment 3. The reference for this comment should be changed to Section 6.5.2, page 6-20. In addition to the comment as presented the following should be added: An alternative method for estimating exposure to VOCs during showering is to assume that showering exposure is equivalent to exposure from ingesting two liters of the contaminated water per day.

Specific Comment 4. The last sentence should be deleted and the following should be added: This paragraph attempts to include risk management decisions in the baseline risk assessment. In order to provide the risk manager with all necessary information the baseline risk assessment should include the future residential scenario. This comment was previously submitted after the review of the Exposure Assessment Technical Memorandum.

Specific Comment 5. In addition to the comment as presented the following should be added: The adolescent aged 8-18 should be changed to an adolescent aged 7-16 with a weight of 45 kg for Region IV consistency. All appropriate portions of the document should be changed accordingly.

Specific Comment 20. The Region X risk based concentrations should be removed from this comment. The comment should include MCLs for water. For the soil samples the Region X RBCs are the same as the RCRA RFI Guidance health base criteria; the values for hexachlorobenzene and beryllium should remain and the reference should be changed.

Additional Comments to be Conveyed to the Responsible Party

This document should include a section on Remedial Goal Options (RGOs). This section should contain a table with media clean-up levels for each chemical that contributes to a pathway that exceeds a $1E-4$ risk or HI of 1 or greater (chemicals contributing risk to these pathways need not be included if their individual carcinogenic risk contribution is less than 10^{-6} or their non-carcinogenic HQ is less than 0.1) and for each scenario evaluated in the baseline risk assessment. The table should include the 10^{-4} , 10^{-5} , and 10^{-6} risk levels for each chemical, media and scenario and the HQ 0.1, 1 and 10 levels as well as any ARAR values (state and federal). The purpose is to provide the RPM with the maximum risk-related media levels on which to develop remediation aspects of the RS and Proposed Plan.

Section 6.3.4, Page 6-3. This section should be changed to reflect that the risk characterization integrates that toxicity and exposure assessments into quantitative and qualitative expressions of risk.

Section 6.4.2, Page 6-6. This section should contain an initial table which summarizes the potential site contaminants of concern. This table should contain all contaminants which meet the following criteria: contaminants detected in at least one sample; contaminants which are present at concentrations which are significantly higher than in blank samples; inorganics which are detected at concentrations two times background samples; and tentatively identified compounds which may be associated with site activities. The data summary table should contain the frequency of detection, range of detects, average concentration and background concentration. The non-detects should not be incorporated into the average concentrations.

Section 6.4.2, Page 6-7, Number 2. It is agreed that only constituents with EPA-derived toxicity values should be evaluated quantitatively in the baseline risk assessment. However, this criteria should not be used to eliminate contaminants from the contaminants of potential concern list. As previously stated, those constituents without EPA-derived toxicity values should be addressed qualitatively.

Table 6-1. This table should follow the format of Exhibit 5-6 in "Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part A)" (RAGS).

Figures 6-1 and 6-2. These figures shows many complete pathways identified as insignificant; all complete pathways should be quantitated in the baseline risk assessment. The baseline risk assessment should show which pathways are insignificant. This

comment was previously submitted after the review of the Exposure Assessment Technical Memorandum.

Section 6.5.1.6, page 6-16. This section should be revised to include all complete exposure pathways including the future residential pathway.

Section 6.5.2, page 6-18. This section should include the equation used to calculate the 95% upper confidence limit and an example calculation. This section indicates that the associated tables include the arithmetic mean for each constituent; the tables do not include this information.

Section 6.5.3.1, page 6-21. As previously stated in the comments on the Exposure Assessment Technical Memorandum, the average scenarios should be included in an appendix and not in the body of the risk assessment since it is not used in remedial decision making. Risk decisions are based on reasonable maximum exposures. The NCP states "During the development and analysis of alternatives, the risks associated with potential alternatives, both during implementation and following completion of remedial action, are assessed, based on the reasonable maximum exposure assumptions and any other controls necessary to ensure that exposure levels are protective and can be attained" (FR Vol. 55, No. 45, page 8712). As indicated by footnote 1, benzene was included in the contaminants of concern for sediments even though it was not detected in any sediment samples. It is inappropriate to include as a contaminant of potential concern a compound that was not detected in a media.

Section 6.5.3.2.3, page 6-24. The information presented in this section is inconsistent with Table 6-15. The text indicates that the average and RME ingestion rates for the adolescent resident are the same; the table indicates that they are different. However, the ingestion rates for adolescents should be the same as for the adult. The Exposure Factors Handbook indicates that individuals above 10 kg should have the same water ingestion rate.

Section 6.5.3.2.4, page 6-25, bullet 3. It is unclear from this bullet if the industrial workers cited are remedial workers who would be exposed while sampling the monitoring wells or if the reference is to plant workers who would be exposed during routine tasks. Evaluation and prevention of exposures to remedial workers investigating sites is regulated by OSHA while exposures to workers who would not normally contact site related contamination in their jobs should be quantified in the baseline risk assessment.

Section 6.5.3.2.4, page 6-25, bullet 4. The organic permeability constants listed should be referenced.

Section 6.5.3.2.4, page 26, bullet 2. The FI term of 0.5 is acceptable for current exposures provided that adequate

documentation of basin flooding for 6 months is provided. However, the future scenario should eliminate the FI term to include the risk estimates for possible future improved drainage of the basin.

Section 6.5.3.2.6, page 6-30, bullet 1. The 0.5 factor applied for flooding of the basin is unconservative and not justified. Fishing in the basin is more likely to occur when the basin is not flooded than flooded, however, the survey responses are assumed to be yearly averages likely to include this factor.

Section 6.5.3.2.6, page 6-31. Reference to Casaret and Doull, 1986 is not included in the reference list. Also, "Casaret" should be changed to "Casarett."

Section 6.6.1, page 6-35. The footnote on this page should be eliminated; a discussion on the scientific debate would be appropriate to the uncertainties section.

Section 5.5.4, page 6-41. The level of concern for blood lead should be 10 ug/dl not 10 to 15 ug/dl.

Tables 6-11 and 6-12. As previously stated in the comments on the Exposure Assessment Technical Memorandum, the fraction contaminated term is not appropriate; 0.5 should be replaced with 1.0 to reflect the possible contact of a contaminated area for all of the assumed onsite days. The site specific factor should be eliminated from these equations.

Table 6-14. The exposure times for showering, RME 0.01 hr/day or 0.6 minutes and AVG 0.0069 hr/day or 0.4 minutes, are unacceptable.

Table 6-15. The ingestion rates for adolescents should be the same as for the adult. The Exposure Factors Handbook indicates that individuals above 10 kg should have the same water ingestion rate.

Table 6-16. This table needs reformatting; the table is missing the exposure duration for AVG adolescent. The site specific factor should be eliminated from these equations. The matrix effect factor should be eliminated since this factor is included in the absorption factors of 1.0% of organics and 0.1% for inorganics.

Table 6-18. As previously stated in the comments on the Exposure Assessment Technical Memorandum, the fraction contaminated term is not appropriate; 0.5 should be replaced with 1.0 to reflect the possible contact of a contaminated area for all of the assumed onsite days.

Table 6-19. The exposure times, RME 0.01 hr/day or 0.6 minutes and AVG 0.0069 hr/day or 0.4 minutes, are unacceptable.

Table 6-20. The heading "Fraction Contaminated" should be deleted and replaced with "Adsorption Factor."

Table 6-22. The matrix effect factor should be eliminated since this factor is included in the absorption factors of 1.0% of organics and 0.1% for inorganics.

Table 6-23. As previously stated in the comments on the Exposure Assessment Technical Memorandum, the fraction contaminated term is not appropriate; 0.1 should be replaced with 1.0 to reflect the possible contact of a contaminated area for all of the assumed onsite days.

Table 6-27. This table should indicate which values were obtained from IRIS and which values were obtained from HEAST. This table should include the carcinogenic weight-of-evidence classification; the text states (page 6-40) it will be included in Table 6-27. Many entries in this table contain more significant figures than the data indicates is appropriate. This table should show the dermal RfD's which have been converted from an administered RfD to an absorbed RfD. The inhalation slope factor for arsenic should be $50 \text{ (mg/kg/day)}^{-1}$ (HEAST, 1992); this slope factor assumes a 30% absorption of inhaled arsenic. The draft inhalation RfD of $8.3\text{E-}5 \text{ mg/kg/day}$ should be used for arsenic. The oral slope factors for DDD and DDE are reversed. Two separate RfD have been verified for cadmium; $1\text{E-}3 \text{ mg/kg/day}$ should be used for soil and $5\text{E-}4 \text{ mg/kg/day}$ should be used for water. The subchronic RfD for cadmium should be deleted because of background dietary exposure, a subchronic oral RfD was not estimated. The chronic RfC for chromium should be $5.7\text{E-}7 \text{ mg/kg/day}$. The RfD for copper should contain a footnote indicating that there is not EPA verified RfD for copper and that this value was calculated from the SDWA treatment technique action level.

Appendix K6-71. It is unclear why the information on the IUBK model is included in the reference section for 1,1,2,3-tetrachloroethane.

If I can be of further assistance or if you have any questions please contact me at 347-1586.